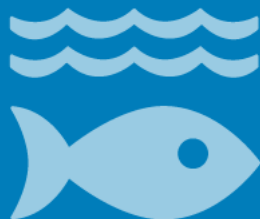


14 LIFE BELOW WATER



NUMBER OF
PUBLICATIONS & THESES

3



NUMBER OF
PROJECTS

0



NUMBER OF
EVENTS

0



NUMBER OF
COURSES OFFERED

2



NUMBER OF
COLLABORATIONS

0



NUMBER OF
AWARDS

6

SDG 14 LIFE BELOW WATER

Conserve and sustainably use the oceans, seas and marine resources for sustainable development

Targets and Indicators

14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution

14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans

14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels

14.4 By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics

14.5 By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information

14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation

14.7 By 2030, increase the economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism



14.a Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries

14.b Provide access for small-scale artisanal fishers to marine resources and markets

14.c Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in United Nations Convention on the Law of the Sea, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of "The future we want"

their resilience, and take action for their restoration in order to achieve healthy and productive oceans".

Theses

In 2024, the thesis titled as **"Computational investigation of drag and settling behavior of micro-meso plastic particles"** was completed in TEDU. This thesis focused on the numerical analysis of the drag coefficient and settling velocity of plastic particles. Settling velocity is an important key parameter in the performance of the numerical modeling of pollutant transport. It has been shown that plastic litter constitutes almost 70% of the litter pollution in the world's waters (rivers, lakes, groundwater and oceans). Plastics have entered the food chain made their way up to higher trophic levels, and hence to human body. It is shown that nano-plastics exist in the pericardial gland. Modelling studies shows us the accumulation areas of plastics; therefore, enhancing the quality classification water areas, contributing valuable data to support the sustainable protection of the water environments.

Courses, Theses, Publications

On October 14, 2021, TEDU's University Senate made a commitment to pursue the Sustainable Development Goals (SDGs) to enhance awareness of these issues both at the university and in the local community.

Courses

CE 436 Integrated Coastal Zone Management: This course offered by the Civil Engineering Department of TEDU aims to introduce the existing pressures on coastal areas, and the strategies developed within the framework of Integrated Coastal Zone Management (ICZM). One learning outcome of the course is **"analyze the anthropogenic impact on the marine coastal areas, and the environmental issues threatening the coastal system"**. This learning outcome support SDG 14 and suggest ways to sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening

Publications

TEDU researchers have also authored research papers, which contribute to the life below water research. The article published by TEDU researcher(s) entitled as "Strategic Adaptation to Climate Change through Monte Carlo-Based Multi-Criteria Decision Model in Marine Spatial Planning". addresses policy, planning, and programming challenges exacerbated by climate change in Marine Spatial Planning. MSP can be defined as "Marine Spatial Planning (MSP) is a public process of analyzing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic and social objectives that have been specified through a political process." as given by Intergovernmental Oceanographic Commission of UNESCO. MSP is a tool and ensures that the activities take place in the oceans (fishing, aquaculture, shipping, renewable energy, nature conservation and other uses compete for maritime space) are carried out in a sustainable way. MSP's are one of the



important tools in combat with the climate change especially in the preservation of the marine species. MSP establishes rational use of marine space to protect the environment. This study develops a model to assess the vulnerability of coastal defenses to climate-induced sea-level rise and storm surges. The study emphasizes the need for strategic planning and decision-making to mitigate future risks in coastal zones.

Events - Activities

Life with Nature Academy: In 2024, the Life with Nature Academy was successfully conducted at the TOVAK International Marmaris Academy in Marmaris/Turunç between July 7–14, with the support of the Muğla Metropolitan Municipality. The program, organized under the theme “Women and Ecology,” brought together 20 female students from various universities pursuing undergraduate, graduate, and doctoral studies (See Image 1).



Image 1. The Living with the Nature Academy

Evidence : <https://ell.tedu.edu.tr/en/whats-happening-tedu/life-nature-academy-2-women-and-ecology>

EGET and TEDU Collaboration: The theoretical courses, developed collaboratively by instructors from the EGET Foundation and faculty members of the TEDU English Language and Literature Department, provided participants with comprehensive knowledge of sustainable living, including social, cultural, and economic dimensions. Complementing the theoretical component, hands-on workshops led by

EGET Foundation instructors enabled participants to acquire practical skills and experience in environmentally sustainable practices applicable to daily life.

Enriched with performance exercises, film screenings, visits to archaeological sites, and musical events, the training program fostered an integrative understanding of human-nature interactions and the importance of preserving terrestrial ecosystems. By promoting awareness of ecological stewardship and sustainable land use, the Life with Nature Academy directly contributes to the objectives of **Sustainable Development Goal 14 and 15**, aiming to protect, restore, and promote the sustainable use of terrestrial ecosystems. The program concluded with a certificate ceremony, formally recognizing participants' engagement and learning achievements.

Evidence:

<https://www.eget.org.tr/eget/dogayla-yasam-akademisinin-2-sini-gerceklestik/>

Collaborations, Projects, Awards

Projects

The project titled as “Investigation of Settling Velocity for Regular and Irregular Shaped Microplastics by Experimental, Numerical and Deep Learning Methods” and funded by TÜBİTAK (The Scientific and Technological Research Council of Turkey) aims to determine the settling velocity and settling behavior of microplastic particles in different polymer types using experimental, numerical and deep learning techniques. This project contributes to Target 14.1 of the SDG 14 “By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.”

Marine Pollution by OCTET: This project aims to raise awareness about marine pollution and identify necessary solutions that address the needs of the community. Within the scope of the project, group members collaboratively selected the topic, visited relevant areas, observed existing problems,



and prepared an awareness poster (See Image 2). Additionally, schools were visited to inform students and encourage proactive behavior regarding ocean protection. Through these activities, the project successfully highlighted the negative impacts of marine pollution and emphasized sustainable solutions for the future. Overall, the project demonstrates our commitment to protecting underwater life and contributing to environmental sustainability.



Image 2: Marine Pollution by OCTET

Evidence:

https://ctl.tedu.edu.tr/sites/default/files/docs/CTL-Faaliyet-Raporu-2024_2.pdf

Campus

Er Geveni is safe with TEDU: Due to its location, Ankara is a city rich in plant diversity with over 1400 taxa according to the Flora of Turkey. Many endemic plant species can be observed in the districts of Ankara. However, with the increasing population pressure in Ankara, the natural habitats of plants living in the city center and its immediate surroundings are decreasing day by day. As a natural consequence, many of the endemic plants in Ankara's flora have disappeared and

some of them are in danger of extinction. The endemic plants living in Ankara are not only a value of our city and country, but are also extremely important as they are part of the entire world ecosystem.

In order to protect the endemic plant species living in Ankara, which have been identified by experts with great work and efforts, to introduce them to the public and to raise awareness on this issue, the "Ankara Endemics Project" with Ankara Metropolitan Municipality is carried out with universities in Ankara.

TEDU undertook the protection of the Er Geveni plant with the protocol signed on 07.07.2020 (See Image 3).



Image 3: Er Geveni Project

The Er Geveni plant, which grows in Çamlıdere geography and is an endemic plant, is a plant species that can also be used in the treatment of cancer. It lives among sparse trees and shrubs, which are representatives of degraded forest remnants. It has an important role in the protection and enrichment of pastures as an erosion preventive.

Evidence:

<https://sustainable.tedu.edu.tr/en/about-us>

Within the scope of the protocol signed between our University and Ankara Metropolitan Municipality, research studies are being carried out for the protection and breeding of the plant species named Er Geveni *Astragalus Bozakmanii Podlech*, which grows narrowly endemic in Çamlıdere district of Ankara Province. The protection of



this plant has been undertaken by our University. In order to show the necessary sensitivity for the plant and to draw attention to its protection, the visual of the plant was printed on promotional products (raw cloth bags, pens, notebooks, etc. obtained from recycled products) used in events. In 2024, Er Geveni-themed designs were incorporated into the university's official corporate gifts, further strengthening institutional ownership and commitment to the protection of this endemic species (See Image 4 and 5).



Image 4. Reproduced Promotion Items



Image 5. Reproduced Promotion Items

Water Dispensers: There are 44 purified water dispensers on our campus, positioned at points that are easily accessible to campus users. In this way, free clean drinking water service is provided to our members (staff, students) and guests visiting our campus,

while plastic waste production is minimized (See Image 6). Water samples taken from four different points from the purified water dispensers positioned on our campus are sent to the Ankara Public Health Laboratory for examination in 12 parameters and reported. The examination report received is shared with all our members. In addition, the filters of all water dispensers are changed every month for a 6-month period.



Image 6. Free Drinking Water thorough Water Dispensers

Glass Water Bottles: In order to reduce plastic waste on our campus, the areas of use of plastic products have been restricted and different alternatives are preferred instead of plastic products in our events, conference and meeting halls. In addition, bottles with corporate logos have been prepared and distributed at various events so that glass products are preferred instead of plastic products. Again, it is aimed to reduce plastic waste thanks to the purified water fountains on the campus (See Image 7).



Image 7: Glass Water Bottles

In order to minimize the change in water ecosystems, contribute to water saving for our future, adapt to changing climate conditions, use resources effectively, with high quality and efficiently, and adopt sustainability activities, many activities and technical studies are carried out in the academic and administrative processes of



TEDU. In order to minimize the physical, chemical and biological changes in water ecosystems, to ensure the economical use of water, which is the basic source of life, and to protect the environment and nature, the measures specified below are closely followed in accordance with the articles of the guide located at <https://www.suverimliligi.gov.tr/yayinlar/>, which includes higher education campuses. In addition, the web pages of official authorities are also followed. (<https://csb.gov.tr/en>, <https://sifiratik.gov.tr/> etc.)

Effective Water Management: TEDU implements and supports structured programs that promote good aquatic stewardship practices on campus. Effective water management practices through motion sensor faucets are followed, and continuous efforts are made to ensure sustainable use of water resources. Water consumption is monitored on a monthly and annual basis, drought-resistant plant species are selected for landscaping, water-saving aerators are installed in taps, and groundwater is used whenever possible (See Image 8). These initiatives not only improve water efficiency but also encourage the university community to adopt responsible water use behaviors.

A contract has been signed with Arçelik for the installation, maintenance, and repair of purified water fountains located within our campus as part of our water management practices. This service is provided under the scope of the contract. Through this collaboration, TEDU ensures the sustainable management of shared water resources with the local community by promoting the responsible use of municipal water and minimizing environmental impact.



Image 8: Water-saving Aerators